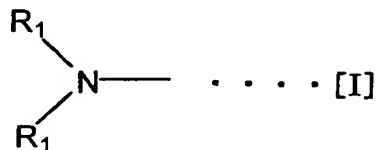
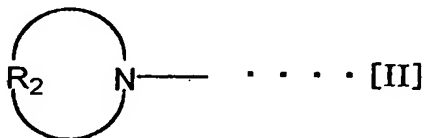


CLAIMS

1. A rubber composition using a modified conjugated diene polymer, characterized by comprising (A) 100 parts by mass of a rubber component containing not less than 10% by mass of a conjugated diene polymer having a polymer chain with at least one functional group selected from the group consisting of a substituted amino group represented by the following formula (I):



- (wherein R₁ is independently an alkyl, cycloalkyl or aralkyl group having a carbon number of 1-12) and a cyclic amino group represented by the following formula (II):



- (wherein R₂ is an alkylene group having 3-16 methylene groups, a substituted alkylene group or an oxy- or N-alkylamino-alkylene group); (B) not less than 20 parts by mass of carbon black and (C) not more than 1.0 part by mass of a polycyclic aromatic compound (PCA).
2. A rubber composition according to claim 1, wherein the conjugated diene polymer is a copolymer of butadiene and an aromatic vinyl compound or a homopolymer of butadiene.
3. A rubber composition according to claim 2, wherein a vinyl bond content in butadiene portion is not more than 25%.
4. A rubber composition according to claim 2 or 3, wherein a content of the aromatic vinyl compound as a copolymer component is not more than 10% by mass.
5. A rubber composition according to any one of claims 2 to 4, wherein the aromatic vinyl compound as a copolymer component is styrene.

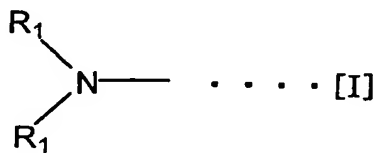
6. A rubber composition according to claim 2 or 3, wherein the conjugated diene polymer is polybutadiene.

7. A rubber composition according to any one of claims 1 to 6, wherein the conjugated diene polymer has a glass transition
5 temperature (Tg) of not higher than -50°C.

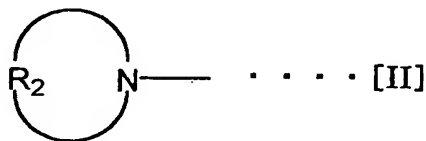
8. A rubber composition according to any one of claims 1 to 7, wherein R₁ in the formula (I) is methyl group, ethyl group, butyl group, octyl group, cyclohexyl group, 3-phenyl-1-propyl group or isobutyl group.

10 9. A rubber composition according to any one of claims 1 to 7, wherein R₂ in the formula (II) is tetramethylene group, hexamethylene group, oxydiethylene group, N-alkylazadiethylene group, dodecamethylene group or hexadecamethylene group.

15 10. A rubber composition according to any one of claims 1 to 9, wherein the conjugated diene polymer is formed by forming a solution of one or more anion-polymerizable monomers consisting essentially of 1,3-butadiene in a hydrocarbon solvent, and then polymerizing the monomers with (D) a lithioamine represented by a general formula of (AM)Li(Q)_y (wherein y is 0 or about 0.5 to 3, and Q is a soluble
20 component selected from the group consisting of a hydrocarbon, an ether, an amine and a mixture thereof, and AM is the formula (I):



(wherein R₁ is the same as mentioned above) or the formula (II):



(wherein R₂ is the same as mentioned above)) or a mixture of the item (D) and (E) an organic alkali metal compound as a polymerization
25 initiator.

11. A rubber composition according to any one of claims 1 to 10,
wherein the conjugated diene polymer has at least one tin-carbon bond
or silicon-carbon bond derived from a coupling agent of a formula:
 $(R_3)_aZX_b$ (wherein Z is tin or silicon, and R_3 is selected from the group
5 consisting of an alkyl group having a carbon number of 1-20, a
cycloalkyl group having a carbon number of 3-20, an aryl group
having a carbon number of 6-20 and an aralkyl group having a carbon
number of 7-20, and a is 0 to 3, b is 1 to 4 and $a+b = 4$).

12. A rubber composition according to any one of claims 1 to 11,
10 wherein not less than 20% by mass of natural rubber and/or
polyisoprene rubber is included in 100 parts by mass of the rubber
component containing the conjugated diene polymer.

13. A rubber composition according to any one of claims 1 to 12,
wherein carbon black as the component (B) has a nitrogen adsorption
15 specific surface area (N_2SA) of not less than $70 \text{ m}^2/\text{g}$.

14. A rubber composition according to any one of claims 1 to 13,
wherein PCA as the component (C) is derived from a softening agent.

15. A rubber composition according to any one of claims 1 to 14,
wherein an extractable of the rubber composition after vulcanization
20 with acetone-chloroform is not more than 20% by mass per the mass of
the rubber composition after vulcanization.

16. A tire characterized by using a rubber composition as
claimed in any one of claims 1 to 15.

17. A tire according to claim 16, wherein the rubber
25 composition is applied to a tread.

18. A tire according to claim 16 or 17, wherein the tire is a
heavy duty tire.